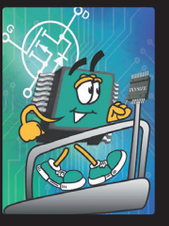
IXYS

SMPD... Power meets SMD

(Surface Mount Power Device)



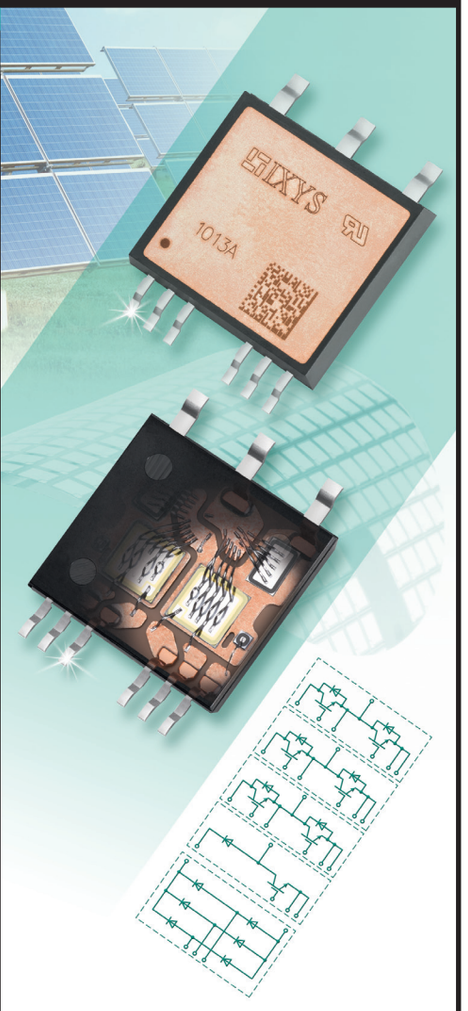
February 2013

Overview:

The demand for higher power density in system design is continually driving innovation in semiconductor packaging technology. IXYS continues to be at the forefront of this development with its new isolated package family SMPD™ (Surface Mount Power Device). The IXYS design cornerstone of "MORE POWER – LESS PACKAGE" has resulted in the SMPD™ module range which efficiently provides solutions for applications where traditional offerings create problems such as larger module footprints, higher cost and longer cycle times in assembly and the problem that catalogue items rarely provide the best silicon content.

IXYS' ISOPLUS™ isolation technology has for many years provided a UL recognized rugged isolation platform for a wide range of leading power modules. The SMPD™ range now extends its ISOPLUS™ portfolio to include modules that can be assembled in standard surface mount (SMD) soldering processes and is pick-and-place ready to be assembled on customer's existing SMD assembly lines. The ISOPLUS™ advantage also includes:

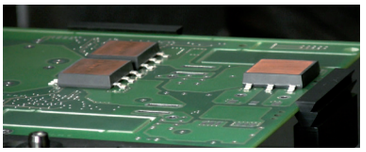
- Isolated package using IXYS' own Direct Copper Bonded (DCB) substrates
- Voltage isolation up to 2500V (UL Recognized)
- Lower junction-to-heat sink thermal resistance
- Improved temperature and power cycling performance
- Higher reliability than copper based modules
- Very small coupling capacitance -> Reduced EMI
- Reduced parasitic inductance -> Optimized Switching Performance
- Replacement of multiple discrete reduces system size
- Shorter time to market in providing optimized silicon die content

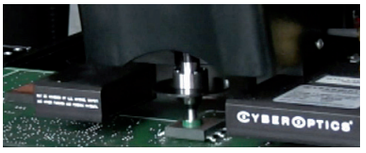


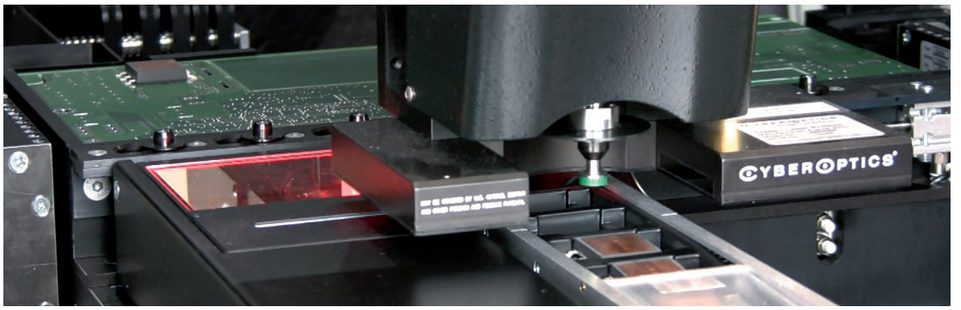
The IXYS SMPD™ range provides not only a large array of standard options in terms of topology or silicon varieties. Its simplicity by design and optimized manufacturing process can allow fast time to market for customers that require differing die and circuit combinations effectively fast tracking product development. IXYS removes the need for more expensive competitive solutions and can successfully combine numerous discrete devices in one high reliability package that can then be easily assembled on current SMD assembly lines.

Added to this the IXYS SMPD™ provides the ideal modular circuit building blocks so that the designer can select the ideal solution. For instance one SMPD can provide a solution for each stage of a Motor Inverter – 1x SMPD™ for the three phase diode input rectifier, 1xSMPD™ for the Brake or PFC stage and 3xSMPD™ for the 3 phase IGBT inverter. The customer can then select where to position each stage to optimize his heat sink or cooling solution often downsizing materials.

The IXYS SMPD™ range provides a solution-scale package reducing material waste and lowering power footprint for all the power electronic applications of today and those of the future. Its platform flexibility and ease in assembly provides cost efficiency not just in terms of module cost but in the important processes of system design, time to market and product assembly.







SUMMARY TABLE – SMPD

DIODE

Part Number	Pack.	V_{CES} (V)	I_{C25} (A)	Config.
DPG60B600LB	B	600	62	
DHG50B1200LB	B	1200	50	
DLA100B1200LB	B	1200	124	
DHG60U1200LB	B	1200	62	
DMA90U1800LB	B	1800	99	
DSA120X150LB	B	150	75	
DSA120X200LB	B	200	75	
DSA240X200LB	B	200	120	

IGBT

Part Number	Pack.	V_{CES} (V)	I_{C25} (A)	Config.
MMIX1X200N60B3	X	600	175	
MMIX1G320N60B3	X	600	400	
MMIX1G75N250	X	2500	110	
MMIX1X100N60B3H1	X	600	105	
MMIX1X200N60B3H1	X	600	175	
MMIX1Y82N120C3H1	X	1200	78	
MMIX1Y100N120C3H1	X	1200	92	
MMIX2S50N60B4D1	X	600	50	
IXA20PG1200DHGLB	B	1200	32	
IXA30PG1200DHGLB	B	1200	43	
IXA40PG1200DHGLB	B	1200	61	
IXA40PF1200TDHGLB	B	1200	61	
MPC40RK600LB	B	600	52	
IXA20RG1200DHGLB	B	1200	32	
IXA30RG1200DHGLB	B	1200	43	
IXA40RG1200DHGLB	B	1200	61	
IXA20PT1200LB	B	1200	32	

MOSFET

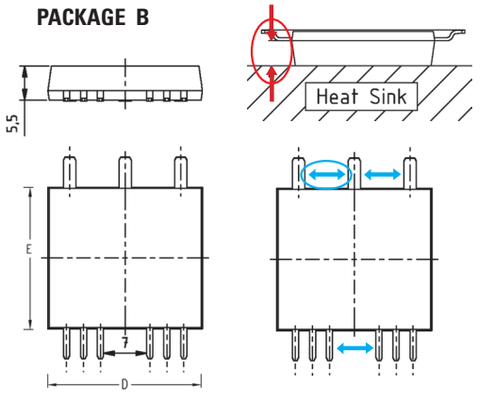
Part Number	Pack.	V_{CES} (V)	I_{C25} (A)	Config.
MMIX1T600N04T2	X	40	600	
MMIX1T550N055T2	X	55	550	
MMIX1F520N075T2	X	75	500	
MMIX1F420N10T	X	100	334	
MMIX1F360N15T2	X	150	235	
MMIX1F230N20T	X	200	168	
MMIX1F180N25T	X	250	130	
MMIX1F160N30T	X	300	102	
MMIX1F210N30P3	X	300	108	
MMIX1F132N50P3	X	500	63	
MMIX1F44N100Q3	X	1000	24	
MMIX1F40N110P	X	1100	30	
MKE38P600LB	B	600	50	
MKE38RK600DFELB	B	600	50	

HV-IGBT/BIMOSFET

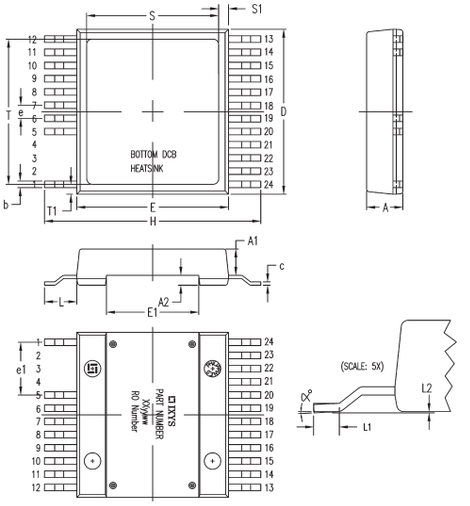
Part Number	Pack.	V_{CES} (V)	I_{C25} (A)	Config.
MMIX4G20N250 [1]	X	2500	23	
MMIX4B12N300	X	3000	26	
MMIX4B20N300	X	3000	34	

[1] without diode

PACKAGE B



PACKAGE X



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.209	.224	5.30	5.70
A1	.154	.161	3.90	4.10
A2	.055	.063	1.40	1.60
b	.035	.045	0.90	1.15
c	.018	.026	0.45	0.65
D	.976	.994	24.80	25.25
E	.898	.915	22.80	23.25
E1	.543	.559	13.80	14.20
e	.079 BSC		2.00 BSC	
e1	.315 BSC		8.00 BSC	
H	1.272	1.311	32.30	33.30
L	.181	.209	4.60	5.30
L1	.051	.067	1.30	1.70
L2	.000	.006	0.00	0.15
S	.742	.792	18.85	20.12
S1	.057	.082	1.45	2.08
T	.823	.873	20.90	22.17
T1	.056	.080	1.42	2.03
∝	0	4°	0	4°

SMPD

→ improved creepage and clearance distance

Pin – Heat Sink: 4,0 mm min

Pin – Pin: 7,0 mm min

NOTE:
1. Bottom heatsink meets 2.6KV AC isolation to the other pins.
2. All leads are matte pure tin plated.

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